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ABSTRACT

To demonstrate that a proven story mapping technique for teaching learning disabled, poor comprehenders could be used to improve the comprehension of groups of normal children as well as learning disabled and low-achieving children, heterogeneous groups of third and fourth graders, including five learning disabled and low achieving students, were taught to use a story mapping strategy. A multiple baseline design across two groups was used to demonstrate group control. A model-lead-test teaching paradigm was used to shape comprehension responses to a level of independence, without teacher assistance. The three major findings of the intervention study were that (1) both experimental groups improved on daily story comprehension as a result of learning to use a story mapping technique, (2) all five low achieving and learning disabled children showed similar improvement, and (3) the progress of the normally achieving children was not impeded by including low achievers in the group instruction, thus by-passing use of ability grouping. (HOD)

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CENTER FOR THE STUDY OF READING

Technical Report No. 363

GROUP STORY MAPPING: A COMPREHENSION STRATEGY FOR BOTH SKILLED AND UNSKILLED READERS

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Abstract

Heterogeneous groups of third/fourth graders, including five learning disabled and low achieving students, were taught to use a story mapping strategy to improve reading comprehension. A multiple baseline design across two groups was used to demonstrate group control. A model-lead-test teaching paradigm was used to shape comprehension responses to a level of independence, without teacher assistance. Group averages for daily comprehension maintained above 80% correct when children were no longer required to use the strategy. Four out of five of the poor comprehenders also maintained improved comprehension above 75% correct. Improvements were found to generalize to measures of listening comprehension, criterion-referenced tests in the curriculum, and spontaneous story writing. These improvements did not generalize well to all sub-tests of the Nelson Reading Skills Test, raising questions about the difference in student performance on group versus individually-administered tests. The major conclusions were that comprehension can be improved for normal and low achieving children using a schema-based approach and that ability grouping was not necessary to achieve this end.

Group Story Mapping: A Comprehensive Strategy for both Skilled and Unskilled Readers

In the past decade, the field of special education has moved increasingly toward normalization of handicapping conditions. Impetus for this movement was strongly influenced by the passage of P.L. 94-142, the Education of the Handicapped Act, which provided for the education of the handicapped in the least restrictive educational environment. For the mildly handicapped, including those with reading problems, this resulted in a movement toward educating such children in the general classroom, commonly referred to as mainstreaming. For many mainstreamed children, difficulty in reading is their primary handicapping condition. Seriously lacking in both the special education and reading education literatures, are substantive bodies of empirically-based information on effective teaching techniques that can be used with large group instruction, while accommodating low achieving and special needs students.

On the contrary, ethnographic studies of how reading is taught in the classroom raise serious questions about how effectively poor readers are taught in general classrooms. For instance, McDermott (1976, 1977) conducted a microethnographic study of two first-grade reading groups, one high and one low. The data from the observational field notes collected during these studies indicated that some teachers offer a different and poorer learning environment to poor readers. Instruction for the poor readers was more likely to focus on word recognition, rather than comprehension, with inequitable turn-taking during oral reading being characteristic of the reading lesson. In fact, one third less time was spent actively reading in the low groups. Along these same lines, Collins

(1983) also found classroom teachers (second and third) to spend less time with low reading groups. In the low groups themselves, teachers were found to use fewer framing or preparatory remarks prior to story reading than they did with high ability groups. Collins also concluded that ability grouping tends to be inflexible, permitting little movement out of initially formed groups. Eder (1983) and Rosenbaum (1980) have also written about the negative effects of ability grouping, particularly emphasizing the lack of fit between individual aptitude and classroom ability grouping.

These kinds of issues regarding differential treatment of poor readers formed the basis for the present study, which was an attempt to avoid ability grouping and differential teacher treatment of poor comprehending students. In this study, a story mapping technique was used to improve reading comprehension of third and fourth graders, while accommodating some low-achieving and learning disabled children within group instruction. The technique was based on a schema-theoretic view of reading comprehension (i.e., Anderson, 1977; Anderson, Reynolds, Schallert & Goetz, 1977), where emphasis was placed on developing an improved correspondence between reader's prior knowledge structures (schemata) and textual material. Readers who have difficulty understanding what they are reading may not be activating prior knowledge (or schemata) as they read and consequentially the newly acquired information may not seem relevant to the reader; or, they may not be efficient at using these schemata. A third possibility is that they are unaware of any possible relationship between existing schemata and new information. Spiro (1980) recommends that good comprehension instruction should provide for building skills in all three areas. A story mapping technique has tremendous potential for doing just this. When the reader is instructed

about inter-related components or parts of a story, this provides a basic framework that draws the reader's attention to the common elements among narrative stories; thus enlarging the possibility of the reader searching his/her mind for possible information, searching the text for such information, and using the story map as a framework for drawing the two information sources together.

The intent of this study was to demonstrate that a proven story mapping technique for teaching learning disabled, poor comprehenders (Idol-Maestas & Croll, 1985) could be used to improve comprehension of groups of normal children as well as learning disabled and low-achieving children. The use of story mapping was based on earlier writings recommending that children's attention be drawn to parts of stories that are drawn together to form a basic story structure (Beck & McKeown, 1981; Pearson, 1982). Story mapping brings the reader's attention to important and inter-related parts of a narrative story. These story parts can be thought of as a type of story schemata for organizing and categorizing important story components. Several research teams have used story schemata similar to those displayed in Figure 1 as a means of improving reading comprehension of skilled readers (Gordon & Pearson, 1983; Short & Ryan, 1982; Singer & Donlan, 1983; Stein & Glenn, 1977) as well as with less skilled (Short et al., 1982) and learning disabled readers (Idol-Maestas et al., 1985). The latter study was the predecessor of the present study in that the same technique and general procedures were used successfully with five learning disabled, elementary school children to improve poor comprehension. Reading comprehension improved over time without continued use of the story mapping technique. In addition, listening comprehension and standardized test performance improved, with

some students showing generalized improvement to more difficult reading materials. In the present study these procedures were adapted for teaching groups of children with varied abilities. In the present study, it was further hypothesized that integrating low- with normally-achieving children would cause the low achievers to engage in a beneficial form of vicarious learning by viewing the desired responses of more skilled readers. The outcome goal was that the students would use this technique as an independent strategy for understanding text. Formulation of this goal was based on the important distinction between a technique and a strategy articulated by Armbruster, Echols, and Brown (1983); a technique only becomes a strategy when the learner spontaneously and independently applies the technique as a means of arriving at a solution to a problem.

The multi-phase design used in this study allowed for a gradual shaping of learner behavior toward a mastered and independent level of learning. In the first phase, the teacher modeled the desired comprehension response, followed by a teacher-assist or lead phase where the teacher assisted with responses when needed. The third phase required learners to respond independently without teacher assistance. As a means of experimental control this independent stage was followed by a formal phase of maintenance where comprehension responses were merely monitored without using the story map. Maintenance of learned responses is the formal and most desired outcome of teaching students to use strategies. Eventually, learners must be able to apply strategies without constant supervision (lead phase) or without using a concrete technique (story mapping), with the general intent being to promote generalization and to discourage situational learning.

Method

Subjects

This study was conducted in a third/fourth grade, elementary classroom in a medium-sized midwestern city. There were 27 students in the class with 11 students (five males and six females) in each of the two groups. The remaining five students (two males and three females) served as an additional control group. There were two learning disabled children in the first group, and two low-achieving and one learning disabled children in the second group. All five of these students exhibited low and/or variable responses to comprehension questions (see Figure 4). There was a fourth learning disabled child but his comprehension responses were acceptable (better than 80% correct) during baseline conditions. There was also another low achieving child in the first group, who moved early in the study.

Instructional Procedures

Design. Twenty-two students were randomly assigned to one of two groups; the groups were evenly comprised of males and females. Learning disabled and low-achieving students were also randomly assigned to the two groups. A multiple-baseline design was used (Hersen & Barlow, 1976; Kazdin, 1982) extending the baseline for the second group. This design allows for the second group to serve as the control group for the first group, where one would expect the extended baseline of the second group to remain depressed until the intervention is implemented. Each group also serves as its own control via a positive and incremental shift between the baseline and intervention phases.

An additional control group consisted of five students whose parents did not want them to participate in an intervention research study. All of the pre-post test measures were also collected for these students; results were compared to the two groups that received instruction in story mapping.

Baseline conditions (A). Using an overhead projector to display the generic questions (see Figure 1), the teacher gave a general explanation of each of the ten questions. She then directed the students to read each story silently reminding them that they had to answer the generic questions upon completion of reading. Stories were returned to the teacher prior to answering the questions. The maximum time allowed for story reading was 15 minutes, and 20 minutes for answering the comprehension questions. The comprehension responses were returned and scored by the teacher; feedback was not given to the students.

The six lowest achieving students were paired, each with a high-achieving student. The low-achievers were told that if they had difficulty in reading a word or in spelling of words for comprehension responses, they could ask their matched partner for assistance. This opportunity for assistance was rarely used; low-achievers were much more likely to ask the teacher for assistance in reading; requests for teacher assistance occurred infrequently. Baseline conditions lasted four days for the first group and eight days for the second group.

Intervention/model phase (B1). Baseline conditions were continued, but following silent reading, the teacher showed the group an overhead transparency of the story map (see Figure 2). (The screen was set so that the students in the second group could not see the display until they were ready to begin this phase.) Using the displayed story map and

paper copies of the story map, each group completed the contents of the story map with the teacher calling on individual students for responses. The teacher called on students in what appeared to be a random fashion but she privately checked off students' names as they responded to ensure equal opportunity to respond. All students filled in their own copies of the story map by copying the group responses as the teacher filled them in on the overhead transparency. Then, students turned in their story maps and books, and answered independently the written comprehension questions.

Intervention/lead phase (B2). Baseline conditions were continued; the teacher no longer modeled story map use, and students independently filled in the story map as they read. They were told that they could fill in the maps as they read the story, after they read it, or a combination of both types of responses. The vast majority of the time they completed the maps after reading as a matter of choice. After reading and story map completion, students returned to the group. The teacher lead the group, again calling on students to identify story map contents in the previously described manner. Again, the teacher recorded the responses on the transparency of the story map, with the students making any necessary corrections on their individual story maps as a result of the group exchange. Then, students turned in story maps and books to the teacher and answered the comprehension questions.

Intervention/test phase (B3). Students continued to independently and silently read stories using the story maps as they read. The teacher no longer called on them to respond as a group to story map components, and overall baseline conditions were followed. The criterion for change to

the maintenance phase was a group average response of 80% correct responses to the questions for two consecutive days.

Maintenance phase. Baseline conditions were continued with students reading silently, answering written questions, and not using the story maps.

Materials

Narrative stories that had a discernible story structure were selected from the Macmillan Reading Program, Series r (1975, levels 15, 16 & 17). Stories were randomly assigned to order within each of the three levels. Both groups read 21 stories.

Dependent Measures

The primary dependent measure was the percentage of correct, written responses to ten comprehension questions given to students after reading each story. These questions referred directly to the components of the story map, with exception to the final question which encouraged students to pose another possible solution to the problem raised in the story (see Figure 1).

The second dependent measure was an oral, curriculum-based assessment given three separate days prior to and after the study was conducted. The author was interested in measuring the progress students made in the curriculum itself, especially by low achieving and learning disabled readers. This measurement is especially important as there is evidence (Jenkins & Pany, 1978a; 1978b) to show that clear discrepancies can be expected between grade equivalent scores between seven commercial reading series and five standardized tests of reading achievement. These were the expected grade equivalent scores given mastery of words that

appeared in both tests and series. Similar concerns have been reported by Armbruster, Stevens and Rosenshine (1977).

The curricular assessment procedures included: a) having students individually and orally read passages from various levels of the Macmillan r Series and b) setting criterion levels (95% correct accuracy, 80% correct comprehension, and 75% correct words per minute [cwpm]) for mastery of each level (as described in Idol-Maestas, 1983; Idol-Maestas, Ritter, & Lloyd, 1983). The average reading rate for the normal readers was 125 cwpm; for the five low readers the average rate was 79 cwpm. These procedures resulted in a grade equivalent score based on the highest level within the series at which each student met the placement criteria. The final measures were the gain scores (by years, months) made by each student from the beginning to the end of the study.

The third way that pupil progress was measured was by examining percentile gain scores for reading comprehension and word meaning on the Nelson Reading Skills Test (Hanna, Schell, & Schreiner, 1977). Changes in raw scores on the three, word part subtests of this test were also examined (sound-symbol correspondence, root words, and syllabication), as percentile ranks were not available.

The final measure for examining student change was to administer a series of group listening comprehension tests before and after the students were taught to use story mapping. Previous studies (Idol-Maestas, in press, Idol-Maestas et al., 1985) have shown listening comprehension to improve as a result of using some type of direct instruction in reading comprehension. Six stories were randomly selected from the first quarter of a different basal reading series than that used for instruction (Ginn, 1982, level 3.2). Three stories were read to the entire class of students

on three separate days for each of the pre-and post-tests. After listening, students answered questions about the stories, based on the components of the story map (see Figure 2).

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Insert Figures 1 and 2 about here

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Reliability Procedures

Twenty-five percent of the daily comprehension responses (primary dependent measure) were scored by a second person; inter-scorer reliability was consistently high (r = .96, p < .001).

Scoring of the curriculum-based assessment, listening comprehension tests, and the Nelson Reading Skills Test was checked a second time by the principal investigator with 100% agreement between scorers.

For reliability checking of the instructional procedures themselves, audio/video tapes were made of the procedures in each phase of the study. The principal investigator and a research assistant viewed these tapes to ensure that procedures were being followed. The research assistant also visited the classroom at least once a week, usually more often.

Results

Group Reading Comprehension

The control via the extended baseline design was clearly demonstrated by the incremental shifts in improved reading comprehension as measured by the questions and as a result of beginning the use of story mapping (refer to Figure 3). This positive shift was true for both groups. Both groups also showed averaged improvements from model to lead phases, indicating continued improvement after teacher modeling ceased. Most

important, both groups remained above criterion when using the maps without teacher assistance (test phase) and this improvement maintained after the maps were no longer used (maintenance phase).

An analysis of variance with repeated measures design was used to compare the phase means across all subjects in both groups, resulting in an overall significant shift across phases (F (4, 21) = 4.45, $p < .05$). Post hoc Scheffe' tests verified the significant differences ($p < .01$) to be between the baseline phase and all of the remaining phases (model, lead, test, and maintenance phases). These results indicate that once students began using the story mapping strategy, there was a significant and positive shift in the average of the groups to answer comprehension questions.

Reading Comprehension of Unskilled Readers

All targeted students, learning disabled and low achieving, showed positive shifts in comprehension when story mapping was introduced. As indicated in Figure 4, there was a general and maintained improvement for all five students. Specifically, two of three learning disabled children demonstrated an average maintained performance at or above 75% correct comprehension. The remaining child showed a drop from an average of 85% correct comprehension in the test phase to one of 55% correct during maintenance. This child still showed a 20% improvement from baseline to maintenance phases.

In summary, all of the special needs students (learning disabled and low achieving) clearly benefited from story mapping instruction in spite of two important facts. One was that they were reading in materials that were written for grade levels one or more years more difficult than their placement levels on the curriculum based assessment. The second fact is

that the comprehension instruction was offered in a group setting, with teacher expectations for the group at large placed upon the correctness of their comprehension responses. Spelling and correct syntax were not part of the scoring criteria; only correctness of response was considered.

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Insert Figures 3 and 4 about here

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Growth on the Curriculum Based Assessment

The gain scores for curriculum placement level were compared across each of four groups: normally achieving children in each of the two experimental groups (n = 9; n = 8), the control group (n = 5), and the learning disabled and low achieving children (n = 5). A one-way analysis of variance across groups showed significant group differences (F = 7.21 (3, 26), p < .001). The low group of poor comprehenders made significantly better gains on curriculum placement level (p < .05), than did any of the remaining three groups even though all groups showed gains; Scheffe' contrasts were used to make these comparisons.

Comprehension Performance on a Standardized Test

Pre/post gain scores for total performance, reading comprehension, and word meaning on the Nelson Reading Skills Test (NRST), as well as those for three word part subtests, were analyzed across groups of children. The groups were the same four groups described for the curriculum-based assessment: the two groups of normally achieving children, control subjects, and the low functioning students. One-way analyses of variance for group by each of the reading tests were conducted; only the sound-symbol correspondence test showed a

statistically significant group difference (F = 5.11 (3, 26), p < .0074). Using Scheffe' contrasts (p < .05), the scores of the learning disabled and low achieving group were significantly better than those of any of the three remaining groups. There were no significant differences among the four groups for any of the remaining reading tests.

Although none of the other tests on the NRST showed significant group contrasts, a means analysis (see Table 1) does show some interesting comparisons. For instance, on the reading comprehension test, the control group made better percentile gains than the normals in the experimental groups, but the low students made a larger gain than any of the other sub-groups. The same low group did not make gains in word meaning. The overall correlation between the reading comprehension and word meaning tests was significant (p < .002), but not especially high (r = .52), accounting for only 27% of the variance. The low achieving and learning disabled students also showed interesting contrasts on these same six sub-tests. One student (Subject B) showed gains on all six tests, three showed gains on three of the five tests, and one (Subject J) showed gains on two sub-tests.

There was also only one significant contrast for sex on the syllabication sub-test (F = 4.16 (df 1, 26) p < .05) Across all groups boys made better average gains ($\bar{x}$ = 1.86) than girls ($\bar{x}$ = .46) in syllabication, although the pre-test means were almost identical for both groups ($\bar{x}_G$ = 11.35; ($\bar{x}_B$ = 11.46).

Improved Listening Comprehension

A one-way ANOVA across the four sub-groups (two groups of normals, controls, and low readers) was found to be significant (F = 4.65 (df = 3, 26), p < .01). Significant Scheffe' contrasts (p < .01) were

found indicating that the low readers and the control groups made significantly better gains than the two normal, experimental groups, although all groups made gains (see Table 2). Note that the number of cases per sub-group were fewer for the control and low groups; also to be considered are the very large gains made by the low group in comparison to any of the other three groups.

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Insert Table 2 about here

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Post Hoc Findings

An unexpected and positive result occurred in the writing behavior of the children. Throughout this study, the teacher required the students to keep a journal collection of stories and narrative descriptions. At the end of the study the teacher indicated that she thought there might have been a spontaneous generalization of learning story components to the structure of the journal entries.

The principal investigator examined the first and last stories that each child had written in his/her journal. These entries were scored by counting the number of parts of the story map that occurred within the story. Pre/post gain scores were calculated reflecting the amount of increase or decrease in the number of story map parts contained in the story. Any students whose journal entries showed no change because of ceiling effect on the pre-test were eliminated from the sample (n = 8). All of these students were in one of the two experimental groups. The gain scores of the remaining experimental students (n = 9) were compared to the control students (n = 4), who had had no instruction in story mapping. The controls only increased the number of story parts by an

average of two parts, while the experimental groups' average gain was three parts (t = 14.3, p < .05). A more indepth examination showed that the average gain scores of the normally achieving children in the experimental group (n = 3) were identical to those of the control group, with an increase of two parts. In contrast, the low-achieving students in the experimental group (n = 6) showed a significantly better average increase of 3.6 story parts; this comparison was statistically significant (t = 6.17, p < .05), supporting the improved changes for the low-achieving children. In conclusion, all but one child were writing stories that included all story map parts by the end of this study. This improvement was also seen in the four children who had had no story mapping instruction; however, the gains in writing these more complete stories were significantly noticeable in the low-achieving children who had learned to construct story maps.

Discussion

The Primary Findings

The three major findings of this classroom intervention study were that: 1) both experimental groups improved on daily story comprehension as a result of learning to use a story mapping technique, 2) all five low achieving and learning disabled children showed similar improvement, and 3) the progress of the normally achieving children was not impeded by including low achievers in the group instruction, thus by-passing use of ability grouping.

One other intervention study designed to mainstream exceptional children has demonstrated that normal group gains need not be adversely affected if the instruction is based on mastery learning, data-based instruction, and use of student reinforcement (Bradfield, Brown, Kaplan,

Rickert, & Stannard, 1973). The implications of the major findings are indeed important in that under certain conditions, comprehension can be improved by direct instruction (contrary to the beliefs of some reading researchers), and that this improvement can be expected to occur with both normal and poor comprehenders. It is likely that a major reason for the success of this technique was that it was based on a well-developed theory (schema theory) of how comprehension occurs. To reiterate, schema theorists hypothesize that as good readers read they activate existing schemata (background information), altering or adding new information gleaned from text to existing knowledge structures, as well as altering perception of text based on this prior knowledge base. The story mapping technique may have provided readers with an organizational framework for thinking about important classes of information to look for when reading narrative stories.

Another important condition of this study was that students were closely monitored to determine whether they could learn a technique, such as story mapping, and then apply it as a thinking strategy after removal of the concretized story map. Most children maintained this independent level of effective comprehension, including the majority of the low achieving children.

A third condition was that the classroom teacher used a model-lead-test teaching paradigm; one that has been well-established by direct instruction experts. Rather than questioning students as a means of teaching comprehension, this teacher modeled the kind of comprehension responses she wanted, followed by being available to offer individual assistance when needed. Note that following strong modeling, most students needed little assistance in applying the technique. It is also

important to note that Durkin, in her study (1978-79) of how reading comprehension is taught, pointed out that when and if comprehension instruction does occur, it is most likely to occur as a means of monitoring comprehension by the teacher asking post-hoc questions rather than as direct instruction about how to improve comprehension. Even though we can't really teach children how to think, we can give them models or basic frameworks (e.g., story mapping) for understanding and collecting information, and we can let them know that we expect them to use the model.

These findings are highly contrastive to the findings of Idol-Maestas (in press) who used an advance organizer technique to improve comprehension of learning disabled students. This technique was very teacher-dependent and required no attempt to teach improved models of thinking but instead simply required readers to complete a set of orienting tasks prior to reading. This technique was successful as long as the teacher was present; improvement dissipated when students' comprehension was monitored after removal of the technique. Classroom and special service teachers should heed this contrast between two very different types of teaching techniques; the distinction being that successful techniques should be transformed into active strategies and should promote user independence.

The Secondary Findings

There were some secondary findings that were interesting and worthy of further discussion. The most important have to do with the generalizability of these findings to other measures of reading comprehension and general application. The secondary measures were of four types (a series of curriculum-based assessments, the Nelson Reading

Skills Test, a series of listening comprehension probes, and an analysis of spontaneous entries made in students' journals). All groups showed improvements on three of these four types of measures including the small (n = 5) control group. However, the low achieving and learning disabled children made better gains than either normals or controls. The only test that was not generally useful for distinguishing among the groups was the Nelson Reading Skills Test, although significant contrasts were found for sound-symbol correspondence with the best gains being made by the low group; boys also showed significantly better gains on the syllabication sub-test. This latter result is probably due to an interest the boys developed in the playing of a syllabication game that was unrelated to the study.

The overall lack of discriminatory power of the Nelson Reading Skills Test may be due to problems inherent within group-administered tests, especially for low achievers. The classroom teacher noted that the best students in the class looked forward to taking standardized tests, as an opportunity to demonstrate what they knew. In contrast, the average and low achieving students viewed group testing with a negative and effortless attitude. The teacher had observed some children, especially low achievers, skipping test items or randomly guessing. This problem has been reported by other classroom and special education teachers known to the author, and is often cited in the special education literature as one of the major reasons for validity problems with use of group-administered standardized tests for diagnosing learning problems.

Two of the three secondary tests that students did show improvement on were individualized measures (the curriculum-based assessments and the journal entries). As discussed by Johnston (1984), individualized testing

may produce better results because students may be motivated to perform when given personal attention by the examiner.

The listening comprehension measure, although a group-administered test, may be more likely to show gains because it is a teacher-lead test, where the teacher is reading a story segment and students are expected to respond. It is also easy for students to realize what is expected of them. The teacher described the children as responding differentially to this test. She said the high achieving readers always (during pre- and post-testing) seemed to listen to the story segment in its entirety, whereas the poorer students "learned" to listen to the parts of the segment that contained answers to the components contained within the story map. This may be an overgeneralized description but worth attending to because it is possible that the low achieving and learning disabled students were taught to attend selectively to important parts of stories but still lacked the higher level, integrative comprehension that occurs spontaneously in high achieving readers.

The type of design used for this study is one that could cause an advancement in classroom research, allowing classroom teachers to be more willing to conduct experimental research in the classrooms. Teachers usually permit an intervention to be tested in their classrooms because they are biased in favor of that particular intervention. At least two problems arise when the intervention is tested by the more traditional use of an experimental and control group. One is that teachers are often bothered by the idea that students in the control group will be receiving nothing or, at best, an obviously weaker instructional package. A second problem is that teachers may be likely to show experimenter bias in favor of the experimental group because of their personal approval of the

intervention. An experimental design using a multiple or extended baseline across groups is a solution to these problems as the teacher is required only to use the desired intervention, with all subjects receiving the control condition for a limited amount of time. There is still some teacher resistance to the need for the extended control condition for the second group, but knowing that time duration will be set to a certain limit helps to alleviate this resistance.

Points of Clarification

One limitation of this study is the small size of the extra control group used in this study, and the lack of notable differences between this group and the normally achieving experimental groups. The reader is reminded that the major control in this study is the baseline condition for both groups prior to intervention coupled with the baseline extension for the second group. It is also important to reiterate that the small, extra control group was simply a spontaneous emergence of five students whose parents' did not want them to participate in the study; consequently, the primary data (daily comprehension probes) were only collected for students who participated in the actual experimentation.

A second point of clarification is that readers are cautioned not to overgeneralize these findings reaching a conclusion that all types of reading instruction might be offered via heterogenous groups, avoiding ability grouping. Low achieving students who are very poor at word recognition could not have been accommodated in this study. Almost all students read at least at a third grade level as measured by the curriculum-based assessment; the only exceptions were three students of the low group who were reading at a late first or early second grade level. Had these students been at a beginning level of reading, just

learning to decode, participation in this study would not have been possible.

Summary

Poor comprehending students, identified by teachers as being learning disabled and low achieving, can be successfully accommodated for comprehension instruction. This can be accomplished if the comprehension instruction provides a framework for understanding, conceptualizing, and remembering important story events. An explicit teacher demonstration of what is expected should be provided, and teachers should communicate to learners that they are expected to use the strategy striving toward an independent level of usage. Finally, the acid test of the effectiveness of a teaching technique is if improved performance continues after intervention removal, thus implying that the learners are applying the technique as a strategy.

Author Notes

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References

Anderson, R. C. (1977). The notion of schemata and the educational enterprise. In R. C. Anderson, R. J. Spiro, & W. E. Montague (Eds.), Schooling and the acquisition of knowledge. Hillsdale, NJ: Erlbaum.

Anderson, R. C., Reynolds, R. E., Schallert, D. L., & Goetz, E. T. (1977). Frameworks for comprehending discourse. American Educational Research Journal, 14, 367-381.

Armbruster, B. B., Echols, C. H., & Brown, A. L. (1983). The role of metacognition in reading to learn: A developmental perspective (Reading Education Report No. 40). Urbana, IL: University of Illinois, Center for the Study of Reading.

Armbruster, B. B., Stevens, R. J., & Rosenshine, B. (1977). Analyzing content coverage and emphasis: A study of three curricula and two tests (Tech. Rep. No. 26). Urbana: University of Illinois, Center for the Study of Reading.

Beck, I. L., & McKeown, M. G. (1981). Developing questions that promote comprehension: The story map. Language Arts, 58(8), 913-918.

Bradfield, R. H., Brown, J., Kaplan, P., Rickert, E., & Stannard, R. (1973). The special child in the regular classroom. Exceptional Children, 39, 384-390.

Clymer, T., Venezky, R. L., & Indrisano, R. (1982). Ginn Reading Program. Lexington, MA: Ginn.

Collins, J. P. (1983). A linguistic perspective on minority education: Discourse analysis and early literacy. Doctoral dissertation, University of California, Berkeley.

Durkin, D. (1978-79). What classroom observations reveal about reading comprehension instruction. Reading Research Quarterly, 14, 481-533.

Eder, D. (1983). Organizational constraints on individual mobility: Ability group formation and maintenance. In J. Cook-Gumperz (Ed.), Language, literacy and schooling. New York: Heinneman.

Gordon, C. J., & Pearson, P. D. (1983). The effects of instruction in metacomprehension and inferencing in children's comprehension abilities (Tech. Rep. No. 277). Urbana: University of Illinois, Center for the Study of Reading.

Hanna, G., Schell, L. M., & Schreiner, R. (1977). The Nelson reading skills test. Iowa City: Houghton Mifflin.

Hersen, M., & Barlow, D. H. (1976). Single case experimental design. New York: Pergamon.

Idol-Maestas, L. (in press). Getting ready to read: Guided probing for poor comprehension. Learning Disability Quarterly.

Idol-Maestas, L., & Croll, V. J. (1985). The effects of training in story mapping procedures on the reading comprehension of poor readers (Technical Report, in press). Urbana, IL: University of Illinois, Center for the Study of Reading.

Idol-Maestas, L. (1983). Special educator's consultation handbook. Rockville, MD: Aspen.

Idol-Maestas, L., Ritter, S., & Lloyd, S. (1983). A model for direct, data-based reading instruction. Journal of Special Education Technology, 6(3), 61-78.

Jenkins, J. R., & Pany, D. (1978a). Standardized achievement tests: How useful for special education. Exceptional Children, 44(6), 448-453.

Jenkins, J. R., & Pany, D. (1978b). Curriculum biases in reading achievement tests. Journal of Reading Behavior, 10(4), 345-357.

Johnston, P. (1984). Assessment in reading. In P. D. Pearson (Ed.), Handbook of reading research. New York: Longman.

Kazdin, A. E. (1982). Single-case research designs. New York: Oxford University Press.

McDermott, R. P. (1976). Kids make sense: An ethnographic account of the interactional management of success and failure in one first grade classroom. Doctoral dissertation, Stanford University, Stanford, California.

McDermott, R. P. (1977). The ethnography of speaking and reading. In R. Shuy (Ed.), Linguistic theory: What can it say about reading. Newark, DE: International Reading Association.

Pearson, P. D. (1982). Asking questions about stories. Ginn Occasional Papers, No. 15. Columbus, OH: Ginn and Company.

Rosenbaum, J. (1980). The social implications of educational grouping. In D. Berliner (Ed.), Review of research in education (Vol. 8). Washington, DC: American Educational Research Association.

Short, E. J., & Ryan, E. B. (1982). Remediating poor readers' comprehension failures with a story grammar strategy. Paper presented at the Annual Meeting of the American Educational Research Association.

Singer, H., & Donlan, D. (1983). Active comprehension: Problem-solving schema with question generation for comprehension of complex short stories. Reading Research Quarterly, 17, 166-185.

Spiro, R. J. (1980). Constructive processes in prose comprehension and recall. In R. J. Spiro, B. C. Bruce, & W. F. Brewer (Eds.), Theoretical issues in reading comprehension. Hillsdale, NJ: Erlbaum.

Smith, C. B., & Wardhaugh, R. (1975). Macmillan Reading Program, Series r. New York: Macmillan.

Stein, N. L., & Glenn, C. G. (1977). An analysis of story comprehension in elementary school children. In R. Freedle (Ed.), New directions in discourse processing. Norwood, NJ: Ablex.

Table 1

Average Raw Score and Percentile Rankings for Five Sub-Tests of the Nelson Reading Skills Test Across Four Sub-Groups

	Raw Scores Gain			Percentile Ranking Gains		Grade Equivalent Gains	
Sub-Group	Sound-Symbol Correspondence*	Root Words	Syllabication**	Word Meaning	Reading Comprehension	Total Score	n
Normals in Experimental Group 1	.66	1.00	.78	8.00	-3.00	.94	9
Normals in Experimental Group 2	.50	1.00	1.00	5.50	-5.25	.71	8
Controls	.20	1.60	2.40	7.60	3.00	1.80	5
Low Achieving and Learning Disabled	2.60	1.20	1.00	-8.00	9.60	.28	5

*Significant ANOVA contrast by group.

**Significant ANOVA contrast by sex.

Table 2

Averaged Gain Scores for Listening Comprehension with Scheffe' Contrasts Across Four Sub-Groups

Sub-Group	n	Pre-Post Gain	Significant Scheffe' Contrast ($p < .01$)
Normals in Experimental Group 1	9	16%	No
Normals in Experimental Group 2	8	7%	No
Controls	5	29%	Yes
Low Achieving and Learning Disabled	5	42%	Yes

Figure Captions

Figure 1. Questions asked for daily comprehension.

Figure 2. Components of the story map.

Figure 3. Averaged percent of correct daily comprehension via a multiple baseline design across two groups.

Figure 4. Averaged percent of correct daily comprehension via a multiple baseline design across groups and within five learning disabled and low achieving students.

Name: _____

Date: _____

1. Where did this story take place?

2. When did this story take place?

3. Who were the main characters in the story?

4. Were there any other important characters in the story? Who?

5. What was the problem in the story?

6. How did _____ try to solve the problem?

7. Was it hard to solve the problem? Explain.

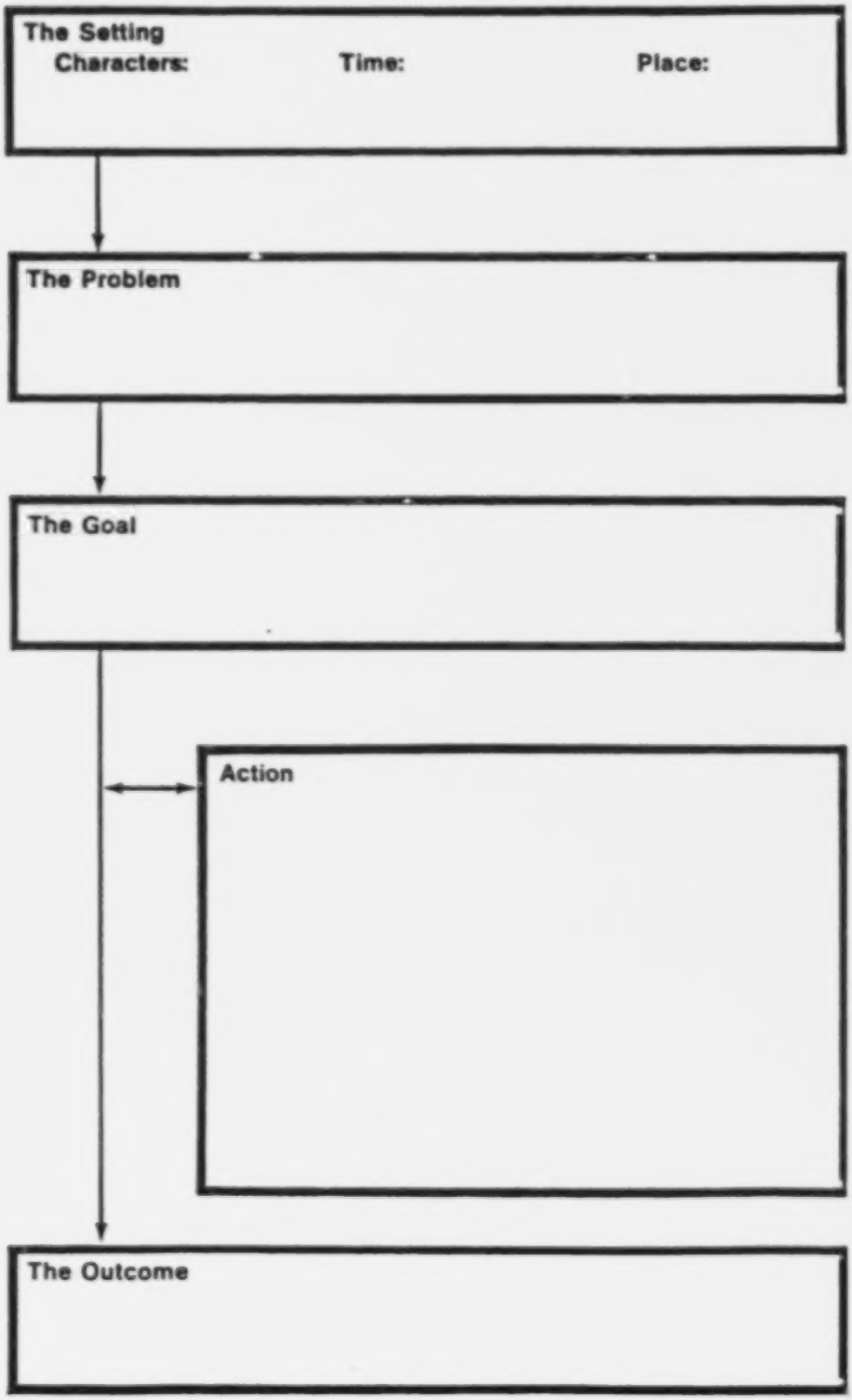
8. Was the problem solved? Explain.

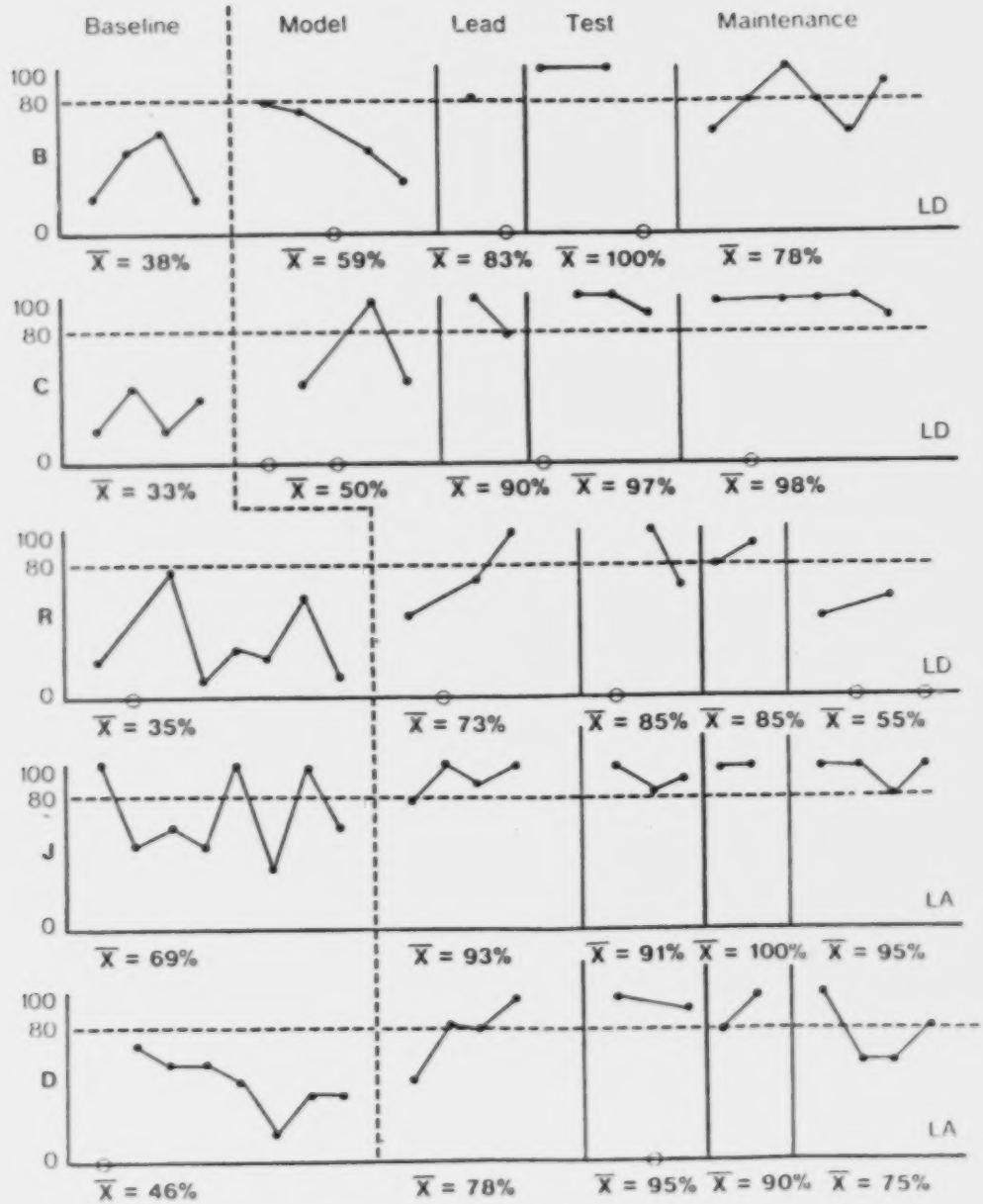
9. What did you learn from reading this story? Explain.

10. Can you think of a different ending?

MY STORY MAP

NAME_____ DATE_____





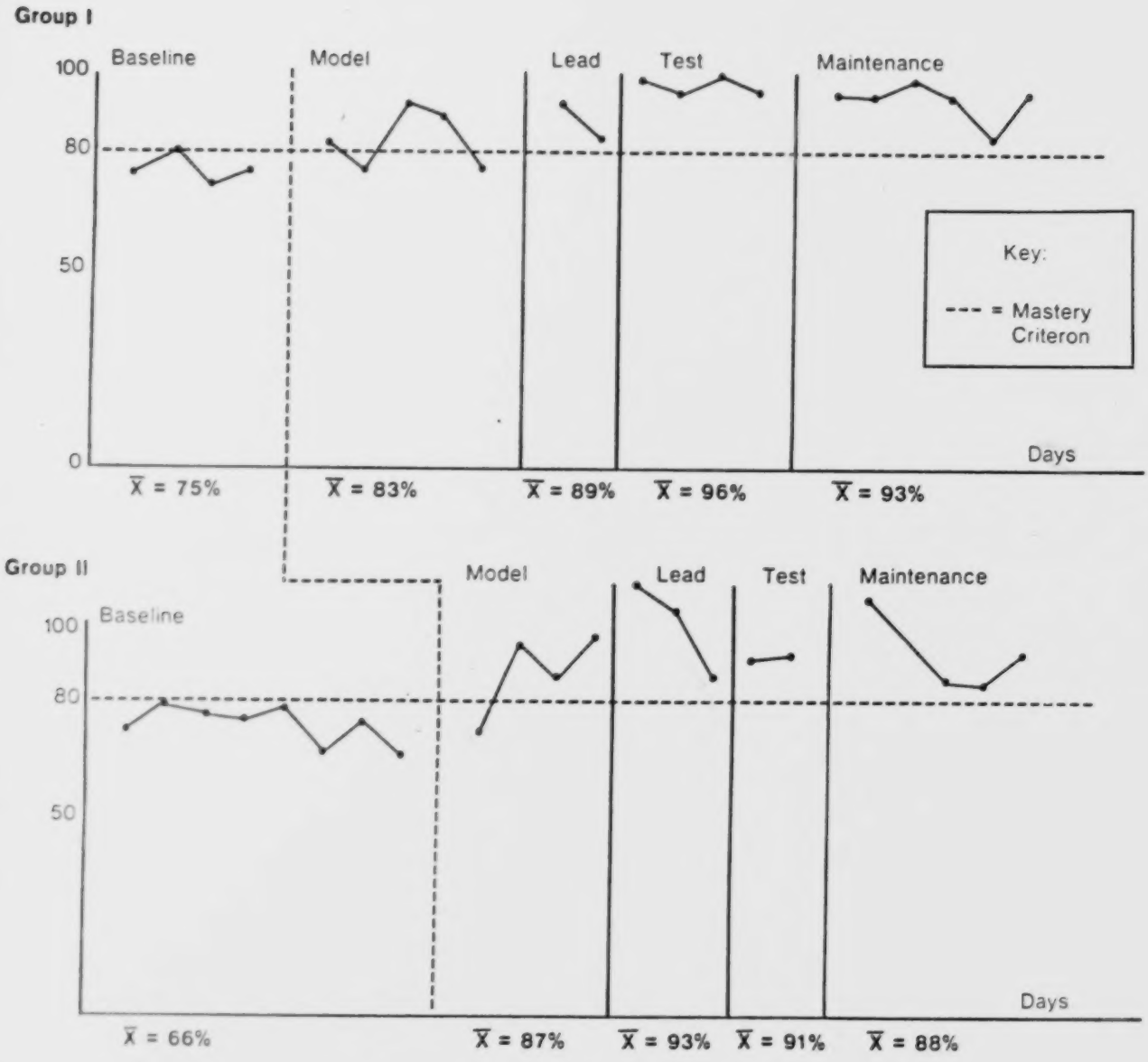
Key

--- = Mastery Criterion

0 = Absences

LD = Learning Disabled

LA = Low Achieving


Group I
Baseline
Model
Lead
Test
Maintenance
100
80
50
0
Key:
--- = Mastery Criteron
Days
X̄ = 75%
X̄ = 83%
X̄ = 89%
X̄ = 96%
X̄ = 93%
Group II
Baseline
Model
Lead
Test
Maintenance
100
80
50
Days
X̄ = 66%
X̄ = 87%
X̄ = 93%
X̄ = 91%
X̄ = 88%